Japanese Publication for Examined Patent Application No. 7180/1990 (*Tokukouhei* 2-7180)

A. Relevance of the Above-identified Document

This document has relevance to claims 1 and 8 of the present application.

B. Translation of the Relevant Passages of the Document

[CLAIMS]

[CLAIM 1]

A fabrication process of a semiconductor device, comprising the steps of: placing a light curable resin or a thermosetting resin between a semiconductor element having an electrode pad on which a metal projection is formed, and an interconnection substrate having an interconnection pattern corresponding to the electrode pad; aligning the metal projection on the semiconductor element with the interconnection pattern on the interconnection substrate, and applying pressure; and applying light or heat to cure the resin.

[CLAIM 2]

The fabrication process of a semiconductor device as defined in claim 1, wherein the resin surrounds the semiconductor element.

[Constitution of the Invention]

In the present invention, a metal projection is formed on an electrode pad on a semiconductor element. A light curable resin or a thermosetting resin is placed between the electrode pad and an interconnection substrate having an interconnection pattern corresponding to the metal projection. The metal projection of the semiconductor element is pressed against the interconnection pattern of the interconnection substrate. Then, the resin is cured to connect the metal projection of the semiconductor element with the interconnection substrate and the interconnection pattern.

[Embodiments]

...A resin 7 is applied on a surface of the circuit board 4 or on a surface of the semiconductor element where metal electrodes are formed (Fig. 1a). The resin 7 is a liquid or a sheet, and is a light curable or thermosetting resin.

Then, the metal projections 3 on the semiconductor element are aligned with the interconnection pattern 6 on the circuit board 4, and a pressure 8 is applied on the semiconductor element and the circuit board 4. The pressure 8 spreads the resin 7 to electrically connect the metal projections 3 with the interconnection pattern 6. Under this condition, light or heat is applied on the resin 7 to convert the resin 7 into cured resin 7'. With the cured

resin 7', the semiconductor element 1 and the circuit board 4 are anchored while maintaining electrical connections between the metal projections 3 and the interconnection pattern 6.

...The resin 7 protrudes to the edges of the semiconductor element and is cured. In this way, the resin 7 provides protection for the electrode pads, thereby realizing a highly reliable semiconductor device.

Amendment under Section 64 f Patent Law

1) Claim 1 has been amended to read as follows:

1. A fabrication process of a semiconductor device, comprising the steps of: placing a light curable resin or a thermosetting resin between a semiconductor element having an electrode pad on which a metal projection made of Au, Ag, or Cu is formed, and an interconnection substrate having an interconnection pattern corresponding to the electrode pad; aligning the metal projection on the semiconductor element with the interconnection pattern on the interconnection substrate, and applying pressure to press the metal projection and the interconnection pattern against each other, so as to spread the resin between the projection and the pattern, obtain electrical connection solely by the pressured applied on the projection and the pattern, and cause the resin to protrude to edges of the semiconductor element; and applying light or heat under this condition to cure the resin, so as to anchor the semiconductor element on the interconnection substrate.

2) Column 3, lines 9 – 16 has been amended as follows:

In a fabrication process of a semiconductor device of the present invention, a light curable resin or a thermosetting resin is placed between a semiconductor

element having an electrode pad on which a metal projection made of Au, Ag, or Cu is formed, and an interconnection substrate having an interconnection pattern corresponding to the pad. The metal projection on the semiconductor element is then aligned with the interconnection pattern on the interconnection substrate, and pressure is applied to press the metal projection and the interconnection pattern against each other, so as to spread the resin between the projection and the pattern, obtain electrical connection solely by the pressured applied on the projection and the pattern, and cause the resin to protrude to edges of the semiconductor element. Light or heat is applied under this condition to cure the resin, so as to anchor the semiconductor element on the interconnection substrate.